

BragGrate™ - Mirror

Reflecting Bragg Grating (RBG) for laser mode selection

Product Description

BragGrate™ Mirror is a reflecting volume Bragg grating recorded in a bulk of photosensitive silicate glass. BragGrate™ Mirrors placed in laser resonators enable spectral and thermal management of the laser radiation and can withstand high optical energy up to 5 J/cm².

The laser modal structure is controlled by the longitudinal mode selection with the bandwidth down to 20 pm and the customized central wavelengths with accuracy 0.1-0.5 nm. BragGrate™ Mirrors have record low absorption and allow thermal laser wavelength shift reduction to 5 pm/K @ 532 nm.

Standard Parameters

Center Wavelength: 405, 6XX, 7XX, 8XX, 9XX, 10XX, 15XX, 19XX nm

Spectral Bandwidth (FWHM): 0.1-0.3 nm

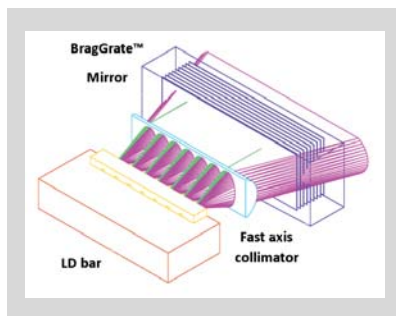
Diffraction Efficiency 10-35, 90, 99 %

Lateral Dimensions: 1.5x2, 1.5x12, 5x5, 8x8 mm²

Thickness 1, 2.5, 4.0 mm

Applications

- Longitudinal and transverse mode selection in laser resonators
- Solid-state lasers
- High-power diode lasers
- MM and SM diode lasers for spectroscopy
- Fiber lasers
- Laser radars, LIDARS, etc...



Schematics of LD bar stabilization with a BragGrate™ Mirror.

Specifications

Diffraction Efficiency (DE): 3-99.7%

Spectral Bandwidth: 20 pm to 0.5 nm

Wavelength Range: 350-2700 nm

Grating Thickness: 0.50-20 mm

Apertures: up to 35x35 mm²

Angular Selectivity: 1-100 mrad

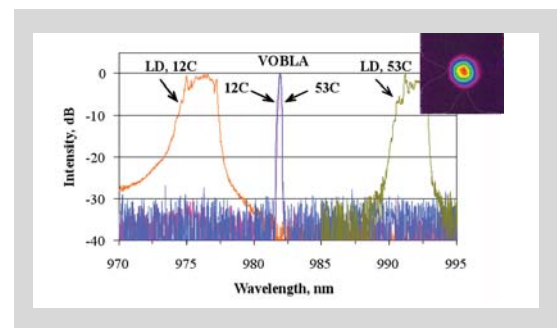
Incident/Output Angles: 0-45 deg

Grating to Surface Tilt Angle: 0-10 deg

Absorption/Scattering Losses: <2%

Advantages & Features

- High power operations, over 1 kW
- High energy operations up to 5 J/cm²
- Low to No power penalty
- Unrestricted lifetime, no degradation of parameters has been detected for over 10 years
- Narrowing of laser line down to 20 pm with superior thermal stability
- Environmental stability
- No polarization dependence
- Unique solutions to achieve SFM oscillations
- Near-diffraction-limited beam quality



Normalized spectra of 2W free running LD and with BragGrate™ Mirror at different T. The narrowed linewidth was < 45 pm. Insert: mode profile with a 10% DE BragGrate™ Mirror



OptiGrate Corp designs and manufactures a full range of BragGrate™ holographic optical elements (volume Bragg gratings) in inorganic photosensitive silicate glass. OptiGrate pioneered commercial VBG technology and supplied VBG-based diffractive optical components to hundreds of customers on 5 continents. This technology is protected by a portfolio of issued and pending patents.